

1. An optical fiber connector in which a lens is formed at a resin injection portion located at a front end of an optical fiber inserted in a connector main body,

wherein the connector main body includes a first pipe for receiving the optical fiber inside, and a second pipe for receiving the first pipe inside,

wherein the lens surface is formed by a dead weight and a surface tension of resin, and

wherein the lens is shaped taking into account a positioning error of the optical fiber with respect to an outer diameter of the connector.

- 2. The optical fiber connector as set forth in Claim 1, wherein the connector main body is made of stainless steel.
- 3. The optical fiber connector as set forth in Claim 1 or 2, wherein the lens is made from a plurality of resins having different refractive indexes.
- 4. The optical fiber connector as set forth in Claim 3, wherein a resin with the largest refractive index among the plurality of resins defines a surface of the lens.
- 5. A method for manufacturing an optical fiber connector in which a lens is formed at a resin injection portion located at a front end of an optical fiber inserted in a connector main body,

said method comprising:

a connector forming step of forming the connector main body by inserting a first pipe in a second pipe, wherein the first pipe receives the optical fiber inside, and the second pipe



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receives the first pipe inside;

a fiber inserting step of inserting the optical fiber in the first pipe of the connector main body formed in the connector forming step; and

a lens forming step of forming a lens by injecting a



light-hardened resin or a thermosetting resin in the resin injection portion.

- 6. The method as set forth in Claim 5, wherein: said lens forming step includes:
- a first resin injecting and hardening step of injecting a first resin, made from a light-hardened resin or a thermosetting resin, into the resin injection portion, and hardening the first resin;

a second resin injecting step of injecting a second resin, made from a light-hardened resin or a thermosetting resin, onto the hardened first resin so as to form a pre-lens; and

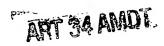
a second resin hardening step of hardening the second resin so as to form the lens.

- 7. The method as set forth in Claim 6, wherein the second resin has a higher refractive index than the first resin.
- 8. The method as set forth in Claim 6 or 7, wherein the first resin and the second resin are UV-hardened resins, and are hardened by irradiation of ultraviolet light.
- 9. The method as set forth in any one of Claims 6 through 8, wherein:

in said second resin hardening step, the wavefront aberration of light that has transmitted through the pre-lens is measured, wherein the lens is so shaped as to have a wavefront aberration close to 0, taking into account a positioning error of the optical fiber with respect to an outer diameter of the connector, and wherein a lens surface is formed by a dead weight and a surface tension of the second resin.

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- 10. An optical coupling apparatus, comprising:
- a light source or optical information output means for outputting optical information;

an optical fiber connector as set forth in any one of Claim



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1 through 4 for optically coupling with emitted light from the light source or the optical information output means; and

setting means having a groove for setting the optical fiber connector and the light source or the optical information output means thereon.